

In accordance with the foregoing, claims 1 and 9-13 have been amended. New claim 14 has been added. A Version with Markings to Show Changes Made to the claims is included herewith. Care has been exercised to avoid the introduction of new matter.

Lyon relates to the division of a word, the extraction of a character from the word, and the recognition of the character. Moreover, Lyon performs character recognitions over characters extracted from a recognition target for the purposes of generating bounds model pairs to which the recognition target is compared. That is, in the Lyon system, a recognition target corresponding to a plurality of radicals or characters is separated into parts each corresponding to a character unit for generating a bounds measurement pair of the recognition target. In the Lyon system, it is impossible to generate a bounds measurement pair without separating a recognition target into parts each corresponding to a character unit.

In contrast to the Lyon system, in the present invention, a feature amount of a recognition target image pattern can be extracted without separating the pattern into portions each corresponding to a character unit.

Tsuruoka discloses a weighted direction index histogram method. The Examiner's assertions regarding claim 3, that Tsuruoka et al. discloses a one-dimensional gradating conversion, are respectfully traversed. The process associated with Tsuruoka et al. as shown in Fig. 3(b) and Fig. 4(b) involves the use of a two-dimensional Gaussian filter. More particularly, lines 13-14 in section 2.3 Realization, of Tsuruoka et al. reads "these sets of values given as weighting factors of filters respectively are in accordance to the 2-dimension space Gaussian distribution". Therefore, the foregoing section of Tsuruoka et al. indicates that in the Tsurouka apparatus, gradating conversion is performed in same direction as character connecting.

The combination, therefore, of Lyon and Tsuruoka is an apparatus which performs character recognition over characters extracted from a recognition target for the purposes of generating bounds model pairs to which the recognition target is compared, using a 2-dimensional Gaussian distribution, and in which the bounds measurement pair must be generated by separating a recognition target into parts each corresponding to a character unit.

Claim 1 of the present application is amended to recite "an extracting unit extracting a feature amount from a recognition target by a process in which the recognition target is not

required to be divided in units of a character even if the recognition target comprises a plurality of characters”.

Claims 9-13 are amended similarly to the foregoing amendment to claim 1.

In addition, new claim 14 is added. Claim 14 presents an alternate recitation of the present invention, particularly related to the “extracting unit”. More particularly, new claim 14 recites “an extracting unit dividing a recognition target in units of meshes, a number of the meshes changed according to a length of the recognition target when the recognition target comprises a plurality of characters, the recognition target not required to be divided in units of characters even if the recognition target comprises a plurality of characters, and extracting a feature amount from the divided recognition target”.

With respect to claim 3, the Examiner asserts that Tsuruoka et al. discusses performing a gradation conversion in a direction perpendicular to the connecting direction of characters. The process in Tsuruoka et al. includes performing a gradation conversion in both directions, in the direction connecting characters and in the direction perpendicular to that of connecting characters.

In contrast to the Tsuruoka discussion, claim 3 of the present application recites “an extracting unit performing a one-dimensional gradating conversion in a direction perpendicular to a connecting direction of characters for a direction code histogram of a contour line in each of a plurality of small areas in an inputted image provided that no gradating conversion is performed in the connecting direction of the characters, and extracting a direction code histogram series obtained from a conversion result as the feature amount of the recognition target”.

In the foregoing recitation of claim 3, the gradation conversion is not performed in the direction connecting characters, and this feature of claim 3 patentably distinguishes over Tsuruoka et al.

In addition, dependent claims 2 and 4-8 recite patentably distinguishing features of their own. For example, claim 2/1 recites “said collating unit includes a memory storing the feature amount of the word, and releases the memory when a collation of the feature amount of the word is completed”.

Withdrawal of the foregoing rejections is respectfully requested.

There being no further outstanding objections or rejections, it is submitted that the application is in condition for allowance. An early action to that effect is courteously solicited.


Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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**VERSION WITH MARKINGS TO SHOW CHANGES MADE****IN THE CLAIMS:**

Please AMEND claims 1 and 9-13 as follows:

1. (FOUR TIMES AMENDED) A word recognizing apparatus, comprising:
  - a listing unit storing a list of at least one candidate word;
  - a dictionary unit storing feature amounts of a plurality of characters;
  - an extracting unit extracting a feature amount from a recognition target by a process in which the recognition target is not required to be divided in units of characters even if the recognition target comprises a plurality of characters;
  - a generating unit referring to the list of at least one candidate word stored in said listing unit, and dynamically generating a feature amount of only a candidate word registered in the list using the feature amounts of characters stored in said dictionary unit during a recognition process for [a] the recognition target[, which is not divided in units of characters]; and
  - a collating unit collating the generated feature amount of the word with [a] the feature amount [of] extracted from the recognition target, and outputting a recognition result.
  
9. (FOUR TIMES AMENDED) A word recognizing apparatus, comprising:
  - an extracting unit extracting a feature amount from a recognition target by a process in which a recognition target is not required to be divided in units of characters even if the recognition target comprises a plurality of characters;
  - a generating unit referring to a list of at least one recognition candidate word, and dynamically generating a feature amount of only a recognition candidate word registered in the list using feature amounts of characters during a recognition process for [a] the recognition target[, which is not divided in units of characters]; and
  - a collating unit collating the generated feature amount of the word with [a] the feature amount [of] extracted from the recognition target, and outputting a recognition result.

10. (FOUR TIMES AMENDED) A recognizing apparatus, comprising:

an extracting unit extracting a feature amount from a recognition target by a process in which a recognition target is not required to be divided in units of characters even if the recognition target comprises a plurality of characters;

a generating unit referring to a list of at least one recognition candidate pattern string, and dynamically generating a feature amount of only a recognition candidate pattern string registered in the list using feature amounts of patterns during a recognition process for [a] the recognition target[, which is not divided in units of characters]; and

a collating unit collating the generated feature amount of the pattern string with [a] the feature amount [of] extracted from the recognition target, and outputting a recognition result.

11. (FOUR TIMES AMENDED) A computer-readable storage medium on which is recorded a program causing a computer to execute a process, said process comprising:

extracting a feature amount from a recognition target by a process in which a recognition target is not required to be divided in units of characters even if the recognition target comprises a plurality of characters;

dynamically generating by referring to a list of at least one recognition candidate word a feature amount of only a recognition candidate word registered in the list using feature amounts of characters during a recognition process for [a] the recognition target[, which is not divided in units of characters]; and

collating the generated feature amount of the word with [a] the feature amount [of] extracted from the recognition target.

12. (FOUR TIMES AMENDED) A computer-readable storage medium on which is recorded a program causing a computer to execute a process, said process comprising:

extracting a feature amount from a recognition target by a process in which a recognition target is not required to be divided in units of characters even if the recognition target comprises a plurality of characters;

dynamically generating by referring to a list of at least one recognition candidate pattern string a feature amount of only a recognition candidate pattern string registered in

the list using feature amounts of patterns during a recognition process for [a] the recognition target[, which is not divided in units of characters]; and

collating the generated feature amount of the pattern string with [a] the feature amount [of] extracted from the recognition target.

13. (FOUR TIMES AMENDED) A recognizing method, comprising:  
 generating a list of at least one candidate pattern string;  
 generating a dictionary for storing feature amounts of a plurality of patterns;  
extracting a feature amount from a recognition target by a process in which a  
recognition target is not required to be divided in units of characters even if the recognition  
target comprises a plurality of characters;

dynamically generating by referring to the list of the at least one candidate pattern string a feature amount of only a pattern string registered in said list using feature amounts of patterns stored in said dictionary during a recognition process for [a] the recognition target[, which is not divided in units of characters]; and

collating the generated feature amount of the pattern string with [a] the feature amount [of] extracted from the recognition target.

Please ADD new claim 14:

14. (NEW) A word recognizing apparatus, comprising:  
 a listing unit storing a list of at least one candidate word;  
 a dictionary unit storing feature amounts of a plurality of characters'  
 an extracting unit dividing a recognition target in units of meshes, a number of the meshes changed according to a length of the recognition target when the recognition target comprises a plurality of characters, the recognition target not required to be divided in units of characters even if the recognition target comprises a plurality of characters, and extracting a feature amount from the divided recognition target;  
 a generating unit referring to the list of at least one candidate word stored in said listing unit, and dynamically generating a feature amount of only a candidate word registered in the list

using the feature amounts of characters stored in said dictionary unit during a recognition process for the recognition target; and

a collating unit collating the generated feature amount of the word with the feature amount extracted from the recognition target, and outputting a recognition result.